

This listing of the claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Currently amended) A method of forming a microelectronic structure comprising;

forming a diamond layer on a substrate, wherein the diamond layer comprises greater than about 30 percent defects; and

forming pores in the diamond layer by removing ~~a substantial amount~~ of the defects from the diamond layer.
2. (Original) The method of claim 1 wherein forming pores in the diamond layer comprises reducing the dielectric constant of the diamond layer by forming pores in the diamond layer.
3. (Original) The method of claim 1 wherein forming a diamond layer on a substrate comprises forming a diamond layer on a substrate by chemical vapor deposition.
4. (Original) The method of claim 1 wherein forming a diamond layer on a substrate comprises exposing the substrate to a gas comprising a hydrocarbon and hydrogen, wherein the hydrocarbon concentration is above about 10 percent of the

hydrogen, wherein the hydrocarbon concentration is above about 10 percent of the hydrogen concentration.

5. (Original) The method of claim 4 wherein exposing the substrate to a gas comprising a hydrocarbon comprises exposing the substrate to a gas comprising methane.

6. (Original) The method of claim 1 wherein forming a diamond layer on a substrate comprises forming a diamond layer on a substrate wherein the diamond layer comprises at least one of double bonds, vacancies or interstitials.

7. (Currently amended) The method of claim 1 wherein removing the defects from the diamond layer comprises etching the defects from the diamond layer by using at least one of a hydrogen plasma, an oxygen plasma and a heated oxygen process.

8. (Original) The method of claim 7 wherein etching the defects comprises exposing the defects to oxygen gas at a temperature below about 450 degrees Celsius.

9. (Original) The method of claim 7 wherein etching the defects comprises

exposing the defects to oxygen gas and utilizing a rapid thermal anneal process.

10. (Original) The method of claim 7 wherein etching the defects comprises exposing the defects to at least one of a hydrogen plasma or an oxygen plasma.

11. (Original) The method of claim 10 wherein exposing the defects to a hydrogen plasma comprises reducing the coefficient of friction of a top surface of the diamond layer by passivating the top surface of the diamond layer with hydrogen.

12. (Original) The method of claim 1 wherein forming a diamond layer comprises forming the diamond layer in a deposition chamber of a cluster tool.

13. (Original) The method of claim 1 wherein forming pores in the diamond layer comprises forming pores in the diamond layer in an oxidation chamber of a cluster tool.

14. (Original) The method of claim 1 further comprising:
forming a second diamond layer on the diamond layer in a deposition chamber of a cluster tool: and
forming pores in the second diamond layer in an oxidation chamber of the cluster tool.

15. (Currently amended) A method of forming a microelectronic structure comprising:

forming a first diamond layer on a substrate, wherein the first diamond layer comprises a mixture of sp² bonds and sp³ bonds, and wherein the diamond layer comprises greater than about 30 percent defects; and exposing the first diamond layer to a hydrogen plasma, wherein the sp² bonds are substantially removed from a top portion of the first diamond layer.

16. (Original) The method of claim 15 wherein forming a first diamond layer comprises forming a first diamond layer by utilizing a plasma comprising a concentration of methane that is above about 10 percent of a concentration of hydrogen.

17. (Cancel)

18. (Original) The method of claim 15 further comprising forming a second diamond layer disposed on the substantially sp² free diamond layer, wherein the second diamond layer comprises a mixture of sp² and sp³ bonds, by utilizing a plasma comprising a concentration of methane that is above about 10 % of a concentration of hydrogen.

Claims 19-31 (Canceled).